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Back to basics: urban households' perspective on free water supply in Ghana in the COVID-19 pandemic

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Abstract: *Water supply is a basic human right and governments have sought to fulfil this right through free supply of water. The emergence of the COVID-19 pandemic has pushed governments, including the Government of Ghana, to return to supply of free water as a measure of enhancing personal hygiene in fighting against the COVID-19 pandemic. This study sought to analyse the reliability of water supply before and during the COVID-19 pandemic and the state of households' water consumption during the pandemic. The paper is based on an online survey of 4,257 urban households across the 16 administrative regions of Ghana. The study found that flow reliability has increased during the COVID-19 pandemic free water delivery. We also established that correlation between consumption before and during the pandemic was* $r = 0.659$, $p < 0.01$. *Therefore, use of the 'stay home campaign' as a strategy to contain the disease in addition to social connection and sharing free water, have increased domestic water consumption. Although the pandemic necessitated the return to water being delivered as a basic necessity to fight against the pandemic, the emphasis on 'back to basics' was not fully implemented. This is because some urban households that could not pay water bills prior to the free water supply were denied the COVID-19 pandemic free water package and rural households who relied on point sources also did not benefit from the package.*

Keywords: back to basics, COVID-19 pandemic, free water delivery, water consumption, Ghana

There has been a global return to the call for water as a basic necessity – 'back to basics' – due to the significance of water services in the fight against the spread of several diseases including COVID-19. The pandemic is of global concern, pushing governments and non-governmental bodies across the world to join efforts from diverse perspectives to prevent its spread. COVID-19 is transmitted through direct contact with infected persons or indirectly through intermediary objects. Direct contact is through droplets of pathogens or aerosols from human expiratory actions (coughing, sneezing, speech, or sweat), while the intermediary objects

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are through resuspension on surfaces (Desai and Patel, 2020). The disease spread globally, affecting almost every country and by 11 March 2020, the World Health Organization declared it a pandemic (WHO, 2020). The disease had spread to over 222 countries worldwide as at 3 December 2021 (WHO, 2021).

The quick spread of the disease compelled states and nations to lock down some epicentre cities in their countries. The epicentres are areas where the COVID-19 virus is most strongly felt – areas with the highest incidence of the disease. In Ghana, epicentre cities (Accra and Kumasi), alternatively referred to as COVID-19 virus hotspot cities, were first put under lockdown for 21 days, starting on 30 March 2020, and subsequently extended to the entire nation with a total ban on transportation movement (Ansah, 2020). To collectively combat the disease, 11 African countries announced various forms of interventions with emphasis on free water supply (Cooper, 2020) to help citizens observe the protocols of hand washing with soap as suggested by WHO and world health experts, as key to preventing the spread of the disease. The WHO produced health protocols as part of measures to contain the disease and they include: performing hand hygiene frequently with an alcohol-based hand rub; regular hand washing with soap under running water; avoiding touching the eyes, nose, and mouth; wearing a mask; and maintaining social distance (WHO, 2020). These measures, especially increased hand washing, may increase the demand for domestic water as people are encouraged to stay at home (Cooper, 2020). Several governments in sub-Saharan Africa have instituted measures to facilitate access to water during the COVID-19 pandemic. These measures include: free water supply (Ghana, Ethiopia, Mali, Democratic Republic of the Congo); subsidies on water bills and points (Burkina Faso, Namibia); and supply of water to vulnerable households and village households (Mauritania, Senegal, Gabon) (Cooper, 2020). Similarly, humanitarian groups and NGOs including UNICEF have partnered with governments to provide water, sanitation, and hygiene (WASH) facilities (pipe water systems, limited mechanized water systems, boreholes, hand washing facilities, and construction of latrines) in an effort to combat various endemic and epidemic disease outbreaks (cholera, diarrhoea, and Ebola) (Coltart et al., 2017, Mills and Cumming, 2016).

Ghana recorded the first cases of COVID-19 virus on 12 March 2020 and as of 31 May 2020, the cases increased dramatically to 8,297, comprising 5,273 active cases, 38 deaths, and 2,986 recoveries. By 3 December 2021, Ghana had 130, 920 cases with 1,209 deaths (WHO, 2021). As part of the precautionary measures to reduce the spread of COVID-19 virus, washing of hands with soap under clean running water for at least 20 seconds is recommended (WHO, 2020) which requires access to an uninterrupted water supply. As such, the Government of Ghana announced the absorption of user water bills for the COVID-19 pandemic period and the provision of water through water tanker services to vulnerable communities at a cost of GH¢280 m (US$48.42 m). The free water supply is geared towards fighting the COVID-19 pandemic. The free water delivery was not applicable to rural areas because rural areas rely on point sources (boreholes fitted with hand pumps and hand-dug wells) to access water. These sources are not piped to premises of households and, as such, do not operate on the principle of pay-as-you fetch, neither

do they have monthly bills. Households only contribute financially as and when the facility breaks down and requires repairs. However, previous studies showed that free supply of water results in increased consumption, extravagant water usage, and anti-conservationist practices (Tortajada, 2010). This study therefore sought to analyse the reliability of water supply before and during the COVID-19 pandemic and the state of households' water consumption during the COVID-19 pandemic.

Theoretical perspective of water consumption in COVID-19

The theoretical foundation of water consumption and conservation is derived from theories of consumer behaviour in a non-water context (Jorgensen et al., 2009). One such theory is the social cognitive theory by Bandura. This study uses Bandura's social cognitive theory to understand the pattern of water consumption in the COVID-19 pandemic free water supply. The social cognitive theory postulates that behaviour change is influenced by environmental, personal, and behavioural factors or attributes (Bandura and Walters, 1977; Grizzell, 2003). The reciprocal interaction between the behaviour, environmental, and personal factors makes it feasible for intervention efforts to be directed at these three core variables (Hassell and Cary, 2007). A primary construct of the social cognitive theory is self-efficacy, which involves one's belief in oneself to accomplish a certain behaviour or task (Bandura, 2004). The social cognitive theory requires researchers to examine the interdependency of personal, environmental, and behavioural factors and how behaviour can influence personal and environmental factors (Phipps et al., 2013). The provision of government free water was aimed at facilitating a change in people's personnel attitude/behaviour towards personal hygiene, particularly hand washing, during the COVID-19 pandemic.

However, without behaviour change, implementation of water and hygiene interventions towards the fight against diseases or pandemic becomes ineffective (Cairncross and Shordt, 2004). According to Hassell and Cary (2007), behaviour is influenced by a person's expected benefits and beliefs. That is, people must believe in their ability to change their attitude to hand washing and perceive the free water directive as an incentive to do so. Behaviours are determined by the interaction of outcome expectations (the extent to which people believe their behaviour will lead to certain outcomes) and efficacy expectations (the extent to which they believe they can bring about the particular outcome) (Bandura and Walters, 1977).

The policy of free water was designed and implemented to change the current behaviour towards hand washing during the COVID-19 pandemic. The behaviour-centred design also provides a useful framework to understand the motives behind households' behaviour and practice of hand washing during the free water delivery: in terms of water consumption levels, hand washing with soap to prevent COVID-19 virus. The main focus of the behaviour-centred design is to fashion an intervention that will lead to changes in the environment in order to produce the desired impact among people (Aunger and Curtis, 2016). People often adjust their water consumption behaviours to suit the environment in order to bring a particular outcome. For example, limited water, due to drought, has resulted

in households installing water conservation equipment and water efficient appliances as measures to reduce water use (Phipps et al., 2013). This behavioural change resulted in an improved self-efficacy. Water use behaviour is influenced by several factors, including: attitude to pricing, compliance with water conservation campaigns and conservation as a habit, household size, and income level. During the COVID-19 pandemic, governments eliminated water charges as a measure to ensure access to adequate supply and to motivate households to practise hand washing and hygiene behaviours. This is because prices of water can affect demand (Jorgensen et al., 2009).

Study area and methodology

The study was conducted in Ghana, covering all 16 administrative regions. Ghana is located on the coast of the Gulf of Guinea and has a population of 30.8 million (Ghana Statistical Service, 2021b). The Ghana Water Company Limited (GWCL) and Community Water and Sanitation Agency (CWSA) are the two main public institutions mandated by the Government of Ghana to provide potable water to urban and rural/small towns respectively.

The study adopted a cross-sectional study design. This design is appropriate for short-term timescales which look at a phenomenon at a particular period of time (Gray, 2019). We focused on households' perspective of free water consumption at a particular point in time (COVID-19 pandemic free water delivery period). We also adopted this design because it can reveal associations between variables (Gray, 2019). A total of 4,257 urban households across the 16 regions of Ghana randomly participated in the survey through the administration of an online semi-structured questionnaire. The questionnaire was designed using Google Forms and administered via online platforms such as emails and WhatsApp groups. WhatsApp is an encrypted smartphone application, allowing users to send and receive text, audio, and images and conduct individual or group conversations. It has become a medium of communication and data collection (Kauta et al., 2020). The online questionnaire administration was necessary as part of measures to observe government physical distancing protocols and to avoid physical contact with respondents, as everyone was at risk of being exposed to the COVID-19 virus. WhatsApp was used to collect the data because WhatsApp is widely used and respondents could respond to the questionnaire at their own convenience. Also, WhatsApp and emails were appropriate over telephones because of the cost and convenience involved in conducting interviews via telephones. However, telephone numbers were provided to enable respondents to reach out to the researchers for further clarification on questions deemed unclear. The respondents were not required to identify themselves and they were further assured that the data would be used for academic purposes only.

The survey spanned a four-month period (from 1 June to 30 September 2020). The government announced the free water services for the first three months (1 April to 30 June 2020) and this was extended by another three months (1 July to 30 September 2020). As at 30 June 2020, we had 855 household respondents.

We encouraged circulation of the survey via WhatsApp platforms and emails and the survey continued. From 20 September to 30 September, the online database showed that only 15 households responded, indicating that few additions were made to the data and it was appropriate to end the survey. Hence, we downloaded the data on 30 September 2020 for analysis when a total of 4,257 households had responded. The study instrument was pre-tested, using 20 respondents and feedback duly incorporated. The essence of the pre-test was to check the consistency of the responses and to gain an understanding of questions by the respondents. The pre-test was done using the WhatsApp platform because we intended to use mainly WhatsApp platforms to administer the questionnaire. Study participants were household heads or household members who paid water bills and/or had knowledge of the household's water bills and consumption levels before and during the COVID-19 pandemic free water supply period.

During the pre-test, an open-ended question was included to extensively explore and obtain detailed information from respondents on factors that are responsible for increase in water consumption. We were able to pre-code some factors responsible for an increase in water consumption during the COVID-19 pandemic based on the pre-test. In order to not limit the options of respondents, there was still an open-ended option (other, specify) to allow respondents to indicate all the possible factors, peculiar to the household, that are responsible for an increase in water consumption. The quantitative data obtained using the Google Forms were converted to SPSS software version 21 for analysis. Descriptive statistics such as univariate analysis and bivariate analysis – Pearson correlation and paired sample t-test were used to analyse some variables. The responses were summarized, categorized, and presented into specific themes. Although the online platforms and use of WhatsApp was useful in generating adequate data, there was a limitation in the use of this technique.

Limitations of the study

It would have been useful to observe and measure whether behaviour (hand washing with soap) was practised. This was a limitation of the study because of the timing of the study – during the lockdown – and the need to also observe the COVID-19 pandemic protocol of physical distancing. Another limitation was that the study missed the opportunity of seeking the views of households who did not have WhatsApp-compatible (smart) phones and computers. Also, the tendency of households allowing others to answer the questionnaire was a limitation. Again, the specific consumption levels (m^3) could not be established in this study.

Results

Background of respondents

The questionnaires administered in the 16 administrative regions of Ghana showed that 16.6 per cent and 10.9 per cent of the responses were from the Greater Accra and Ashanti Regions, respectively, and these regions were considered the

epicentres of the COVID-19 pandemic. The mean number of respondents per region was 266.06, with a standard deviation of 146.955 and a mode of 705. The minimum number of respondents was 105 (2.5 per cent of respondents) and this occurred in the Western North Region. In terms of gender, the survey comprises 78.0 per cent men and 22.0 per cent women. About 47.1 per cent and 11.9 per cent of men and women, respectively, worked in the government sector, while 18.3 per cent and 2.1 per cent of men and women worked in the private sector. Approximately 8.1 per cent and 4.4 per cent of men and women who participated in the study were not employed. The researchers did not have control over the gender response to the questionnaire because it was submitted to general WhatsApp platforms, some of which comprised men and women, and limited emails. The average household size in the study was 4.72 with a standard deviation of 3.102. The average household size is higher than the national average household size of 3.6 (Ghana Statistical Service, 2021b).

Sector of work and main source of water supply

The study analysed the employment status of respondents and the specific employers (government, private sector) they work with. A cross-tabulation of the employment status and the source of water supply was carried out to establish the state of relations. The results are shown in Table 1.

Table 1 shows that 28.9 per cent of respondents who constitute the majority of workers in the government sector had their source of water from GWCL with only 7.2 per cent and 22.9 per cent of respondents in the government sector relying on CWSA and self-supplied sources, respectively. About 9.6 per cent of unemployed respondents relied on GWCL whereas 0.6 per cent and 2.3 per cent had water from CWSA and self-supplied sources, respectively. The dominance of GWCL and self-supplied sources over CWSA can be attributed to the areas of operation. CWSA facilitates provision of water services in rural areas and small towns. The rural areas were not part of the study because they rely mainly on point sources and wells – those sources are outside the COVID-19 pandemic free water delivery. Therefore, the responses from the CWSA are those in small towns. There is no conventional definition of small towns and each country carves out a working definition to suit its operation within the water sector; Ghana defines it to guide the choice of service capacity (volume, distribution network)

Table 1 Sector of work in relation to source of water supply

Employment status/sector	*Main source of water supply*			*Total*
	CWSA	*GWCL*	*Self-supplied*	
Government sector	307 (7.2%)	1,230 (28.9%)	975 (22.9%)	2,512 (59.0%)
Not employed	26 (0.6%)	407 (9.6%)	98 (2.3%)	531 (12.5%)
Private sector	9 (0.2%)	673 (15.8%)	187 (4.4%)	869 (20.4%)
Self-employed	0 (0.0%)	198 (4.7%)	147 (3.5%)	345 (8.1%)
Total	**342 (8.0%)**	**2,508 (58.9%)**	**1,407 (33.1%)**	**4,257 (100.0%)**

of the water system (Fielmua, 2018). In Ghana, the CWSA defines small towns as communities with populations between 2,001 and 50,000. The Ghana Statistical Service (2013), however, defines all communities with a population above 5,000 as 'urban'. This implies that some communities that are purely urban (by the Ghana Statistical Service definition) are actually reported as small towns by CWSA because they fall under the CWSA operational definition of small towns. In terms of population coverage, the CWSA actually facilitates water supply in urban areas because the definition of urban in Ghana refers to localities with populations above 5,000 (Ghana Statistical Service, 2013).

Main sources of water supply, previous and current state of water supply

The results revealed that 58.9 per cent (N = 4,257) of respondents relied on GWCL for their main source of water supply, 33.1 per cent (N = 4,257) were self-supplied, and 8.0 per cent (N = 4,257) relied on the CWSA for water supply. Interestingly, there is a high number of private/self-supplied sources of water delivery in urban areas. Their presence is likely to have negative implications for the customer base of public institutions mandated to provide water (GWCL and CWSA) and subsequently on their revenue targets in the future. Table 2 shows a comparison of reliability of water supply before and during the free water directive.

The study found a substantial improvement in water supply, especially in terms of reliability, after the government directive on the free water supply. Reliability of water flow improved: 19.3 per cent of the respondents said water supply was reliable prior to the COVID-19 pandemic free water and 41.0 per cent mentioned water supply was reliable after the free water directive. On the other hand, respondents who mentioned water flow as unreliable reduced from

Table 2 Reliability of water supply before and after free water directive

Degree of regularity	*Before and after free water directive*	*Main source of water supply*			*Total*
		CWSA	*GWCL*	*Self-supplied*	
Very unreliable	Before	46 (1.1%)	216 (5.1%)	99 (2.3%)	361 (8.5%)
	After	31 (0.7%)	182 (4.3%)	49 (1.2%)	262 (6.2%)
Unreliable	Before	58 (1.4%)	420 (9.9%)	114 (2.7%)	592 (13.9%)
	After	40 (0.9%)	342 (8.0%)	92 (2.2%)	474 (11.1%)
Reliable	Before	65 (1.5%)	462 (10.9%)	294 (6.9%)	821 (19.3%)
	After	102 (2.4%)	886 (20.8%)	759 (17.8%)	1,747 (41.0%)
Total		**342 (8.0%)**	**2,508 (58.9%)**	**1,407 (33.1%)**	**4,257 (100.0%)**

Note: Definition of degree of regularity of water flow:
- Unreliable: Intermittent supply with more than 4—6 days/week of supply
- Reliable: Continuous supply for 24 hr/day for a month
- Very unreliable: Highly intermittent supply, less than 4 days/week

13.9 per cent (before COVID-19 pandemic free water) to 11.1 per cent (during the COVID-19 pandemic free water).

Household water consumption during the COVID-19 pandemic

Descriptive statistics showed that household water consumption increased in percentage terms during the COVID-19 pandemic period. Specifically, 62.3 per cent of the respondents noticed an increase in water consumption levels whereas 37.7 per cent of the respondents did not notice any increase in water consumption. The respondents were required to indicate approximately the percentage increase in water consumption. Households determined percentage increase in water consumption by comparing previous bills with bills received during the COVID-19 pandemic (free water period). The mean increase in water consumption was 18.62 per cent with a standard deviation of 21.982 per cent and a maximum increase of 90 per cent. To test the hypothesis that consumption level before ($x = 0.77$, $s = 0.692$) and consumption level during the COVID-19 pandemic ($x = 0.86$, $s = 0.618$) were equal, a paired t-test was performed. The analysis satisfied the assumption of normally distributed difference scores as well as skewness. It was established that correlation between consumption before and during the COVID-19 pandemic was $r = 0.659$, $p < 0.01$. This implies that there is a statistical significance and that increase in water consumption is associated with the COVID-19 pandemic government free water directive. Therefore, a paired t-test was appropriate for this case. There is sufficient evidence from the analysis of the data that the null hypothesis of equal consumption before and during the COVID-19 pandemic means is rejected at $t(n = 4251) = -7.097$, $p < 0.00$. Respondents could not, however, specifically determine the proportion of water used in bathing, drinking, and hand washing practices because of the dependency of a single source for the multiple water uses. The implication of increased consumption levels during the COVID-19 pandemic period is that, if these consumption levels are sustained after the pandemic, water suppliers such as the GWCL and CWSA will be guaranteed increased revenue from the supply of water.

Factors responsible for changes in water consumption during the COVID-19 pandemic

The preceding sections indicated that there was a significant increase in water consumption during the COVID-19 pandemic period and the specific activities in the household leading to the increase in water consumption required analysis. Households were asked to indicate the factors or activities that led to an increase in their water consumption. Analysis of their responses showed that several factors, linked to COVID-19 pandemic protocols and free water directive, contributed to the increase in water consumption, as shown in Table 3.

The study found that there was a combination of factors at the household level, as shown in Table 3, leading to an increase in water consumption. Among these activities, frequent hand washing, and many household members staying at home during the lockdown period recorded the highest response of about 32.3 per cent.

Table 3 Factors leading to increase in water consumption

Factors leading to increase in water consumption	*Frequency*	*Percentage*
Allow neighbours to fetch free of charge only	57	1.3
Increase in frequency of hand washing only	584	13.7
Increase in frequency of hand washing, allow neighbours to fetch free of charge	80	1.9
Increase in frequency of hand washing, many household members stay home throughout	1,374	32.3
Increase in frequency of hand washing, many household members stay home throughout, allow neighbours to fetch free of charge	214	5.0
Increase in frequency of hand washing, many household members stay home throughout, allow neighbours to fetch free of charge, tankers free supply of water	43	1.0
Tankers free supply of water only	21	0.5
Many household members stay home throughout	260	6.1
Not applicable	1,624	38.1
Total	**4,257**	**100.0**

Discussion

The results show that there is improvement in water supply from GWCL, CWSA, and self-supplied sources, leading to a significant reduction in unreliable water flow at the time of the COVID-19 pandemic government free water directive. Therefore, the announcement of various forms of interventions with emphasis on free water supply by governments of some African countries (Cooper, 2020) to help citizens observe the protocols of hand washing contributed to improvement in water supply in Ghana compared to the period before the free water directive. This is partly because the government had voted financial resources (US$48.42 m) to guarantee payment for water supply, thus motivating water companies to constantly supply water to households. Although access to water is essential for managing disease (Pandey et al., 2020), the emergence of the COVID-19 pandemic and its rapid spread increased the commitment of governments to institute measures that will ensure continuous access to water services. The reliability of water supply has implications for the level of water consumption, especially during the COVID-19 pandemic.

Our findings on the factors that led to an increase in water consumption (see Table 3) conformed with those of Ahmad et al. (2016) that more water usage is often associated with domestic activities, (washing, bathing, hand washing, and cooking), personal sanitation, and large household sizes. The water policy environment (free water supply) and personal factors such as the individual desire to maintain hygiene have led to increased water consumption. The water policy environment has also influenced neighbourhood behaviour towards accessing water. Due to the free water supply, households who have piped connections from GWCL and CWSA allow neighbours that do not have water supply at home, especially piped water, to access water from the former. This requires movements across

households and use of containers to fetch water. Although there is no evidence to suggest that the COVID-19 virus can survive in water, the practice of sharing can serve as a transmission pathway for the COVID-19 virus through close interpersonal interactions (Stoker et al., 2020). Households are motivated to allow neighbours to fetch water freely because this might have benefits such as increasing one's social standing and to maintain good relations with households around them (Aunger and Curtis, 2016). This paper develops the argument that behaviour is not just an outcome but a determining variable (Phipps et al., 2013). Our findings reaffirmed this linkage because households' actions and habits such as allowing neighbours to fetch water also determine the water consumption levels.

During the COVID-19 pandemic free water delivery, the price of water from GWCL was GH¢5.60/m^3 ($1.00/m^3). In a study of households' perception of water rates in relation to their usage level in northern Ghana, an average of 33.3 per cent of respondents indicated that a tariff/rate of GH¢4.50/m^3 as at 2018 limited their water usage (Fielmua and Dongzagla, 2020). This means that the households used less water in relation to the actual household water demand. This implies that water rate is linked to water consumption level. It is argued that the impact of price and non-price of water on household water consumption is often ad hoc due to limited social psychological data (water use behaviour) at the household level (Jorgensen et al., 2009). The factors responsible for the increase in water consumption as presented in Table 3 showed that Tortajada's (2010) observation about extravagant use of water was due to free supply, although the study did not get the quantum or volume of water used by households. Our findings (Table 3) further suggest that households are knowledgeable about the significance of saving water, but this is not reflected in their water use behaviour, as argued by Jorgensen et al. (2009).

The consequence of the free water directive is that, although 65.6 per cent of all respondents envisaged a stability of the current increase in water consumption post-COVID-19 pandemic and free water period, there could also be a decrease in consumption levels as predicted by 19.0 per cent of the GWCL and CWSA customers alone. This conforms with the findings of Szabo (2015), who analysed South Africa's free water policy and found a decrease in water consumptions levels from 12.6 m^3 to 5.6 m^3 after the implementation of their free water policy framework. This has consequences for revenue generation for water companies since some of the social factors that led to increased consumption levels such as allowing neighbours to fetch water free of charge will not be sustained after the withdrawal of free water supply. Additionally, water companies may experience resistance and unwillingness of customers to pay for water bills when the free water directive ends. Alternatively, households, especially poor ones, will reduce water consumption levels post-COVID-19 pandemic in order to incur lower water bills. Given the attitude (based on factors responsible for the increase in water consumption) of customers towards water consumption during the COVID-19 pandemic free water supply, financial sustainability of the water agencies will be a challenge if the free water directive remains operational as long as the COVID-19 pandemic persists. Experience in South Africa showed that free water supply is not sustainable in the long run (Szabo, 2015).

The arrangement for the implementation of the free water directive did not favour customers who defaulted on their payment prior to the COVID-19 pandemic. According to GWCL (2020), customers who were disconnected due to default on their payments will only benefit from the free water directive after payment of arrears and reconnection. Although the causes of non-payment of water bills were not established in this study, similar studies revealed that non-payment of bills is caused by poverty, power asymmetry, poor service delivery, political discouragement, and loss of trust in the management of state resources (Enwereji and Uwizeyimana, 2019, Fielmua, 2018). The inability of defaulting households to pay bills before benefiting from the free water supply potentially limits their efforts to observe the WHO protocols, thus exposing them to the COVID-19 virus. The stay-home campaign during the COVID-19 pandemic could worsen the water demand of defaulting households due to the increase in water use. The implementation approach of the free water has deepened inequality in access to water. According to the Ghana Statistical Service and United Nations Development Programme (2020), about 78 per cent of localities did not benefit from the free water directive. Although the population of these localities is not known, the definition of locality by the Ghana Statistical Service should be a guide for drawing inferences on this proportion. A locality is defined as an inhabited geographical area with a distinct name and it could be a hamlet, mining camp, ranch, farm, village, town, city or part of a town or city (Ghana Statistical Service, 2021a). The free water directive was limited to urban areas and small towns that had piped water systems. The rural areas – where households rely on point sources (boreholes fitted with hand pumps) – did not benefit from the free water supply.

Conclusion

This paper sought to examine the role of WASH in the fight against the COVID-19 pandemic in Ghana. The paper found that the intervention of WASH activities played a critical role in managing the spread of the COVID-19 pandemic in Ghana. The Pearson's correlation coefficient test showed a positive correlation between water consumption increment and its attribution to the COVID-19 pandemic free water directive. Specifically, the use of the 'stay home campaign' as a strategy to contain the disease in addition to social connection and distribution of free water has increased domestic water demand at home. The increase in water consumption as a result of the free water supply shows that tariffs play a significant role in water conservation. The COVID-19 pandemic has necessitated the call for water to be delivered as a basic necessity to fight against the COVID-19 pandemic. The government free water delivery has yielded positive results because it has instigated a number of behavioural responses from households: response to the plight of neighbours without water and increase in hand washing as indicated by respondents. However, the emphasis on 'back to basics' was not fully implemented because households that could not pay water bills prior to the free water supply were denied the free water. There were no measures put in place to ensure that such households benefit from the free water services. Given that the poor and

vulnerable are the most at risk of infection, denying them access to water increases their risk of infection. The practice of personal hygiene was reignited at the time of the COVID-19 pandemic and this could serve as a point of reference for health practitioners and hygiene promoters to devise strategies to ensure the continuous practice of hand washing and hygiene behaviours even post-COVID-19 pandemic.

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